

ANDALEX RESOURCES, INC.  
CENTENNIAL PROJECT

007/019

(TOWER MINE)

CHANGE TO ALLOW

UTILIZATION OF SEDIMENT POND A  
FOR STORAGE OF CRANDALL MINE  
IRON SLUDGE MATERIAL

**(APPENDIX XX-AA)**

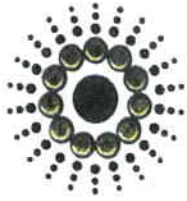
*NOTE TO REVIEWERS:*

*Sediment Pond A is defunct, is not part of the approved drainage control plan, and is currently approved as a “mine development waste storage” site*

**SUBMITTED: December 14, 2010**

File in:  
☐ Confidential  
☒ Shelf  
☐ Expandable  
In C: 0070019 Incoming  
Date: 12/14/2010 For additional information

# COVER LETTER.....C1/C2 FORMS



**ANDALEX**  
RESOURCES, INC.

**COPY**

P.O. BOX 910  
EAST CARBON, UTAH 84520  
PHONE (435) 888-4000  
FAX (435) 888-4002

Utah Division of Oil, Gas & Mining  
Coal Program  
1594 West North Temple, Suite 1210  
Box 145801  
Salt Lake City, Utah 84114-5801

December 14, 2010

Attn: Daron Haddock  
Permit Supervisor

RE: Andalex Resources, Inc., C/007/019  
Tower (Centennial) Mine  
Utilization of Sediment Pond A for Storage of Crandall Iron Sludge  
Appendix XX-AA

Dear Mr. Haddock:

Enclosed are six (6 ea.) copies of a change to the MRP to allow utilization of Sediment Pond A for the storage of the iron sludge material from the Crandall Mine discharge water treatment facility. Please note that Sediment Pond A is an old structure and is no longer part of the approved sedimentation and drainage control plan. Also please note that the structure is currently approved as an "excess spoil and mine development waste storage" site.

Should you have any questions regarding this submittal, please feel free to contact me

Sincerely,

  
David Shayer  
Resident Agent

File in:

- ☐ Confidential
- ☒ Shelf
- ☐ Expandable

In C/ 007/0019 Incoming  
Date: 12/14/2010, For additional information

**RECEIVED**

**DEC 14 2010**

**DIV. OF OIL, GAS & MINING**

## APPLICATION FOR PERMIT PROCESSING

Permit Change ☐New Permit ☐Renewal ☐Transfer ☐Exploration ☐Bond Release ☐

Permit Number: 007/019

of Proposal: Change to allow utilization of Sediment Pond A for storage

Mine: Centennial Project

of Crandall Mine iron sludge material Appendix XX-AA

Permittee: Andalex Resources, Inc.

Description, include reason for application and timing required to implement:.

Instructions: If you answer yes to any of the first 8 questions (gray), submit the application to the Salt Lake Office. Otherwise, you may submit it to your reclamation specialist.

- ☐ Yes ☒ No 1. Change in the size of the Permit Area? \_\_\_\_\_ acres Disturbed Area? \_\_\_\_\_ acres ☐ increase ☐ decrease.
- ☐ Yes ☒ No 2. Is the application submitted as a result of a Division Order?
- ☐ Yes ☒ No 3. Does application include operations outside a previously identified Cumulative Hydrologic Impact Area?
- ☐ Yes ☒ No 4. Does application include operations in hydrologic basins other than as currently approved?
- ☐ Yes ☒ No 5. Does application result from cancellation, reduction or increase of insurance or reclamation bond?
- ☐ Yes ☒ No 6. Does the application require or include public notice/publication?
- ☐ Yes ☒ No 7. Does the application require or include ownership, control, right-of-entry, or compliance information?
- ☐ Yes ☒ No 8. Is proposed activity within 100 feet of a public road or cemetery or 300 feet of an occupied dwelling?
- ☐ Yes ☒ No 9. Is the application submitted as a result of a Violation?
- ☐ Yes ☒ No 10. Is the application submitted as a result of other laws or regulations or policies? Explain:
- ☐ Yes ☒ No 11. Does the application affect the surface landowner or change the post mining land use?
- ☐ Yes ☒ No 12. Does the application require or include underground design or mine sequence and timing?
- ☐ Yes ☒ No 13. Does the application require or include collection and reporting of any baseline information?
- ☐ Yes ☒ No 14. Could the application have any effect on wildlife or vegetation outside the current disturbed area?
- ☐ Yes ☒ No 15. Does application require or include soil removal, storage or placement?
- ☐ Yes ☒ No 16. Does the application require or include vegetation monitoring, removal or revegetation activities?
- ☐ Yes ☒ No 17. Does the application require or include construction, modification, or removal of surface facilities?
- ☐ Yes ☒ No 18. Does the application require or include water monitoring, sediment or drainage control measures?
- ☐ Yes ☒ No 19. Does the application require or include certified designs, maps, or calculations?
- ☐ Yes ☒ No 20. Does the application require or include subsidence control or monitoring?
- ☐ Yes ☒ No 21. Have reclamation costs for bonding been provided for?
- ☐ Yes ☒ No 22. Does application involve a perennial stream, a stream buffer zone or discharges to a stream?
- ☐ Yes ☒ No 23. Does the application affect permits issued by other agencies or permits issued to other entities?

☐ Attach 3 complete copies of the application.

I hereby certify that I am a responsible official of the applicant and that the information contained in this application is true and correct to the best of my information and belief in all respects with the laws of Utah in reference to commitments, undertakings, and obligations, herein. (R645-301-123)

Signed - Name - Position - Date

and sworn to before me this 3rd day of December, 2010

My Commission Expires:  
Attest: STATE OF  
COUNTY OF

Notary Public

March 27, 2013



Notary Public  
LINDA KERNS  
Commission #678211  
My Commission Expires  
March 27, 2013  
State of Utah

Received by Oil, Gas &amp; Mining

RECEIVED

DEC 14 2010

DIV. OF OIL, GAS &amp; MINING

ASSIGNED TRACKING NUMBER

# Application for Permit Processing Detailed Schedule of Changes to the MRP

**COPY**

Title of Application: Change to allow utilization of Sediment Pond A for storage of  
Crandall Mine iron sludge material, *Appendix XX-AA*

Permit Number: 007/019

Mine: Centennial Project

Permittee: Andalex Resources, Inc

Provide a detailed listing of all changes to the mining and reclamation plan which will be required as a result of this proposed permit application. Individually list all maps and drawings which are to be added, replaced, or removed from the plan. Include changes of the table of contents, section of the plan, pages, or other information as needed to specifically locate, identify and revise the existing mining and reclamation plan. Include page, section and drawing numbers as part of the description.

## DESCRIPTION OF MAP, TEXT, OR MATERIALS TO BE CHANGED

<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	
<input type="checkbox"/> ADD	<input checked="" type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	<i>Contents: page 1ix</i>
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	
<input type="checkbox"/> ADD	<input checked="" type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	<i>Chapter 5: pages 5-168, 5-169, 5-170</i>
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	
<input checked="" type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	<i>Appendix XX-AA "Utilization of</i>
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	<i>Sediment Pond A for Storage</i>
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	<i>of Crandall Mine Iron Sludge</i>
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	<i>Material"</i>
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	
<input type="checkbox"/> ADD	<input type="checkbox"/> REPLACE	<input type="checkbox"/> REMOVE	

Any other specific or special instructions required for insertion of this proposal into the Mining and Reclamation Plan?

**RECEIVED****DEC 14 2010****DIV. OF OIL, GAS & MINING**

# CONTENTS.....REPLACEMENT PAGE



## List of Appendices

<u>Appendix</u>	<u>Title</u>
1	Ownership and Control
A	Wildlife Resources Information
B	Permits, Violation, Insurance & Bond
C	Archaeologic Information
D	Raptor Survey
E	Detailed Description of Coal and Other Strata
F	Emissions Inventory
G	Wastewater Disposal System
H	Analysis of Non-Coal Waste
I	Powerline and Sub-Station Design
J	Other Approvals
K	Slope Stability Investigation
L	Hydrology - Surface and Ground Water Inventory
M	Soil Survey and Vegetation Inventory
N	Applied Hydrology and Sedimentology for Disturbed Areas
O	Culvert Systems Analysis
P	Cross-Reference to R645 Rules
Q	Waste Rock Disposal Plan - Wildcat
R	Letters to Surface Owners
S	SPCC Plan
T	Subsidence Monitoring
U	LOM / BLM - R2P2
V	Left Fork Fan - Slope Stability and Vegetation Sampling
W	Coal Lease Modification - 66060
X	Gob Vent Holes
Y	Ventilation Shaft/Blowing Fan Installation
Z	Legal Description of Oso Gaswell and Pipeline
XX-AA	Utilization of Sediment Pond A for Storage of Crandall Mine Iron Sludge Material

## CHAPTER 5.....REPLACEMENT PAGES



propose this area to be south of the Aberdeen truck loadout. The area will be small, however, it will be bermed to avoid runoff while the aeration process is ongoing. Once the aeration process is complete and the material is satisfactorily decontaminated, it will be used again as fill or hauled to our waste disposal area. Another possibility is the use of bioremediation. As this process is still being tested, Andalex does not propose to use this method at this time. However, should the method prove successful and acceptable, Andalex will consider using the process.

At the time of final reclamation, Andalex will need to treat or dispose of small quantities of soils and gravels which have been contaminated with oil and/or fuel. At final reclamation, Andalex will utilize the best available technology (BAT) to treat this quantity of soil and gravel in order that it is suitable for fill material. This would include methods for removing volatile matter and other contaminants. Should it prove at that time that best available technology is inadequate for decontamination, Andalex will dispose of this material at an approved disposal site (not within the permit area). This site would be approved by State Health and EPA for the disposal of this type of material.

#### **Non-Coal Waste**

Non-coal waste consists of lubricants, paints garbage, timber, and other waste generated during mining. Please refer to Plate 6 for the location of non-coal waste disposal (dumpsters).

#### **Combustible Materials**

No special measures are required. All combustibles (paper, etc.), are collected in trash containers and hauled to local city and land fill areas. Andalex currently operates under an SPCC Plan approved by a registered professional engineer. All materials such as oil and grease will be disposed of according to specific local requirements. All used motor oil is collected in 55 gallon drums and is recycled by local oil distributors. All used oils are recycled.

#### **Contingency Plans to Prevent Sustained Combustion**

All which could burn would be small in quantity and consist of mine trash. The trash facility is segregated and if ignited accidentally, could be extinguished using either water or fire extinguishers.

#### **Other Waste**

Utilization of defunct Sediment Pond A for Crandall iron sludge disposal is discussed in Appendix XX-AA.

See R645-301-528.300.

**R645-301-528.320. COAL MINE WASTE**

See R645-301-528.300.

**R645-301-528.321. RETURN OF COAL PROCESSING WASTE TO  
ABANDONED UNDERGROUND WORKINGS**

See R645-301-528.300.

**R645-301-528.322. REFUSE PILES**

N/A

**R645-301-528.323. BURNING AND BURNED WASTE  
UTILIZATION**

N/A

**R645-301-528.323.1 COAL MINE WASTE FIRES**

In the unlikely event that any coal mine waste, including boney material or fine coal waste, were to ignite the fire would be extinguished in the same way that coal stockpile fires are extinguished. That is, the material will be dug out with front-end loaders, spread out on the ground inside the permit area, and be compacted. The material would then be returned to the waste storage area.

**R645-301-528.323.2 BURNING OR BURNED COAL MINE WASTE  
REMOVAL PLAN**

N/A

**R645-301-528.330. NON-COAL MINE WASTE**

See R645-301-528.300.

**R645-301-528.331. DESIGNATION OF NON-COAL MINE WASTE  
MATERIALS**

See R645-301-528.300.

**R645-301-528.332. FINAL DISPOSAL OF NON-COAL MINE  
WASTES**

See R645-301-528.300.

**R645-301-528.333. RESTRICTIONS ON DISPOSAL ON NON-**

## COAL MINE WASTE MATERIAL

See R645-301-528.300.

### **R645-301-528.334.      HAZARDOUS WASTE MATERIALS**

See R645-301-528.300.

### **R645-301-528.340.      UNDERGROUND DEVELOPMENT WASTE**

See R645-301-528.300.

### **R645-301-528.350.      DISPOSAL REQUIREMENTS**

See R645-301-528.300.

### **R645-301-528.400.      DAMS,      EMBANKMENTS      AND      OTHER IMPOUNDMENTS**

See R645-301-528.300.

### **R645-301-529.      MANAGEMENT OF MINE OPENINGS**

See R645-301-528.300.

### **R645-301-529.100.      CLOSURE OF MINE OPENINGS**

#### Abandonment of Portals and Underground Workings

##### **Introduction**

Upon completion of mining activities, the portals will be sealed according to existing state and federal regulations. Conveyors will be removed and pads filled. The slope will be contoured, compacted, and topsoil replaced and graded.

The final sealing of mine openings will be accomplished by placing a recessed concrete block seal 25 to 50 feet from the mouth of the portal. Since a portion of the mine slopes towards the portals, and mine water is present, seals will be constructed with at least one drainage pipe in the lowest portal. This pipe shall be a schedule 80 - 4" PVC, with a U-tube water trap and a valve or cap on the end. The pipe will be extended beyond the portal backfill. The area from the seals to the mouth of the portals will be backfilled. The portal structures will be removed and the exposed coal seam, including portal area, will be covered during reclamation. Please note that the Centennial Seam Mine will not require any new portals on the surface.

If a discharge is found to occur after sealing, the water will be sampled quarterly for compliance with effluent standards of 817.42 and treated (if necessary) during the liability period. See Figures IV-1 and IV-2 for portal sealing details.

APPENDIX XX-AA  
UTILIZATION OF SEDIMENT POND A  
FOR CRANDALL MINE IRON SLUDGE MATERIAL

*NOTE TO REVIEWERS:*

*ADD THIS APPENDIX BEHIND EXISTING APPENDIX Z*

## **APPENDIX XX-AA**

### **UTILIZATION OF SEDIMENT POND A FOR STORAGE OF CRANDALL MINE IRON SLUDGE MATERIAL**

**APPENDIX XX-AA**

**UTILIZATION OF SEDIMENT POND A  
FOR STORAGE OF CRANDALL MINE  
IRON SLUDGE MATERIAL**

ATTACHMENT 1.....NARRATIVE

ATTACHMENT 2.....CHEMICAL ANALYSIS OF IRON  
SLUDGE

ATTACHMENT 3.....AS-BUILT DRAWING OF SEDIMENT  
POND A

# APPENDIX XX-AA

## ATTACHMENT 1

### NARRATIVE

The Crandall Canyon Mine (C/015/032) is a sister mine to the Centennial (Tower) mine. Currently (December, 2010), the Crandall mine is treating the mine discharge water to reduce the concentrations of iron. As part of this treatment process, precipitated iron is allowed to settle into a stilling basin. This precipitated sludge material is regularly pumped out of basin as part of the cleaning and maintenance of the facility. Under the currently approved plan, this sludge material is hauled to the Wildcat Loadout (permitted under MRP C/007/033), where it is disposed of in Sediment Pond C. However, the company is currently in the process of turning ownership of the Wildcat Loadout over to the Intermountain Power Agency (IPA). Therefore, as an alternate to the Wildcat disposal site, the company is now proposing to dispose of the Crandall iron sludge material at the Centennial (Tower) minesite in the defunct Sediment Pond A. This pond area was once part of the sediment and drainage control facilities, but was abandoned during later expansion of the Centennial surface facilities. This pond structure is now designated as an "excess spoil and development waste storage" site, as shown on Plate 6. Even though it is referred to as "Pond A" it no longer receives any runoff drainage, and is now a dry and empty depression, and plays no active role in the currently approved sedimentation and drainage control plan. The outer embankment of the old pond structure is now designated as a Topsoil Storage Pile G.

Removal and disposal of the Crandall iron sludge material has been ongoing on-and-off for the past nine months since April, 2010. The sludge material has been sampled and analyzed for RCRA metals and other parameters. This analysis shows that the material is non-toxic and non-hazardous (see Attachment 2 of this Appendix for the analysis results). The sludge material is mostly water (94% water) when pumped out of the Crandall treatment basin. On several occasions, when the sludge was disposed of in the Wildcat Pond C, it quickly segregated and then dried out. The product remaining in the bottom of the pond was a thin, dense orange cake, approximately 1" thick, which dried and cracked in a typical polygonal dried-mud pattern.

As shown in the Attachment 3 drawing in this Appendix, the storage capacity of Tower Pond A is 48,610 cubic feet or 1.12 acre-feet, available for Crandall sludge storage. Based on the limited experience of iron sludge disposal to date it is difficult at this time to estimate the actual volume of future sludge disposal needed on an on-going basis. However, based on previous experience, the sludge dries out quickly to a concentrated residual cake with minimal volume. This cake dried out in a layer about 1" thick, covering an area of about 800 sq. ft. of the bottom of Wildcat Pond C, for a total volume of approximately 66 cubic ft. This material was initially generated at the Crandall treatment facility over a three month period and involved cleaning about half the sludge from the pond. Therefore, the 66 cu. ft of dried sludge represents approximately one and a half months worth of treatment. One years worth of treatment would generate about 528 cu ft or 19.5 cu yards of dried material. Therefore, the Tower pond A, with



48,610 cu. ft of storage capacity, could hold 92 years worth of dried material. It is interesting to note that, as part of the initial approval of the Crandall iron treatment facility, prior to any actual operating experience, preliminary calculations prepared in consultation with the Division concluded that the Wildcat Pond C could hold more than 250 years worth of expected accumulated dried out sludge material. Wildcat Pond C has a usable storage capacity of 2.577 ac-ft. Tower Pond A has a usable capacity of 1.12 ac-ft. Therefore, comparing the ratio of pond capacities would indicate that Tower Pond A would appear to be capable of holding in excess of 108 years worth of Crandall iron sludge. Although this estimate may be considered somewhat "quick-and-dirty", and while future cleaning experience with the Crandall iron treatment facility will certainly provide a more accurate estimate of anticipated sludge disposal volume requirements, it presently appears that Pond A can provide a reasonable long-term disposal option for the Crandall iron sludge, especially in light of the limited operation experience to date that indicates more than 90 years worth of storage capacity. In the meantime, the company will continue to experiment with alternate sludge disposal options, such as geo-bag filtration devices, which would hopefully provide a more cost-effective alternative for longer-term sludge disposal.

Regular chemical analysis of the sludge material according to Tables 3 and 7 of the Division's Guidelines for Management of Overburden and Topsoil will be submitted to the Division as part of the Annual Reports, or as often as required by the Division. At the time of final reclamation, the dried material would be buried in the fill as per the approved reclamation plan. However, based on Division concurrence and future testing, the material might also be useful as a soil enhancement additive, because of its obvious high iron content.

APPENDIX XX-AA  
ATTACHMENT 2

IRON SLUDGE  
CHEMICAL ANALYSIS



General Offices: P.O. Box 995 Price, UT. 84501 (435)637-8855  
Laboratory: 65 North 300 East Price, UT. 84501

Report Date  
4/15/2010

Client  
**UtahAmerican Energy Inc.**  
**Genwal Resources, Inc.**  
PO Box 1077  
Price, UT. 84501  
Dave Shaver  
(435)888-4017

Sample I.D.  
Flock  
Sampled By: D.M.  
Date: 4/8/2010 Time: 11:00  
Received  
Date: 4/8/2010 Time: 14:05

Field Measurements				
Cond. uS	Temp. C	pH	D.O. ppm	Turbidity NTU

Notes:


Lab I.D. #: 999

Mine Code 8

Site Code

### Certificate of Analysis

Analyte	Results	Units	MRL	Method	Date	Time	Analyst
<b><u>Metals by ICP</u></b>							
Arsenic, Total	<0.10	mg/L	0.10	EPA 200.7	4/13/2010	10:37	BLP
Barium, Total	0.825	mg/L	0.020	EPA 200.7	4/13/2010	10:37	BLP
Cadmium, Total	<0.02	mg/L	0.020	EPA 200.7	4/13/2010	10:37	BLP
Chromium, Total	<0.02	mg/L	0.020	EPA 200.7	4/13/2010	10:37	BLP
Lead, Total	<0.05	mg/L	0.050	EPA 200.7	4/13/2010	10:37	BLP
Selenium, Total	<0.10	mg/L	0.10	EPA 200.7	4/13/2010	10:37	BLP
Silver, Total	<0.02	mg/L	0.020	EPA 200.7	4/14/2010	10:35	BLP
					4/13/2010	10:37	BLP
<b><u>Manual Cold Vapor</u></b>							
Mercury, Total	<0.0005	mg/L	0.0005	EPA 245.1	4/14/2010	13:57	BLP

  
Brandon Pierce  
Technical Director

All reported results meet the requirements of NELAC, except for Balance and Hardness.  
Balance and Hardness are calculated from certified results.



General Offices: P.O. Box 995 Price, UT. 84501 (435)637-8855  
Laboratory: 65 North 300 East Price, UT. 84501

Report Date  
5/17/2010

Client  
**UtahAmerican Energy Inc.**  
**Genwal Resources, Inc.**  
PO Box 1077  
Price, UT. 84501  
Dave Shaver  
(435)888-4017

Sample I.D.  
Sludge 1  
Sampled By: D.M.  
Date: 5/7/2010  
Time: 10:45  
Received  
Date: 5/7/2010  
Time: 12:59

Field Measurements				
<u>Cond. uS</u>	<u>Temp. C</u>	<u>pH</u>	<u>D.O. ppm</u>	<u>Turbidity NTU</u>

Notes:

Sample density is 993 g/L  
Total Solids = 5.88% w/w


Lab I.D. #: 1014

Mine Code 8

Site Code

## Certificate of Analysis

<u>Analyte</u>	<u>Results</u>	<u>Units</u>	<u>MRL</u>	<u>Method</u>	<u>Date</u>	<u>Time</u>	<u>Analyst</u>
<u>Wet Chem.</u>							
Solids, Total Dissolved	710	mg/L	20	SM 2540 C-97	5/14/2010	15:10	BLP
Solids, Total Suspended	5140	mg/L	4	SM 2540 D-97	5/14/2010	15:10	BLP

  
Brandon Pierce  
Technical Director

All reported results meet the requirements of NELAC, except for Balance and Hardness.  
Balance and Hardness are calculated from certified results.



General Offices: P.O. Box 995 Price, UT. 84501 (435)637-8855

Laboratory: 65 North 300 East Price, UT. 84501

Report Date

6/3/2010

Client

UtahAmerican Energy Inc.  
Genwal Resources, Inc.

PO Box 1077  
Price, UT. 84501  
Dave Shaver  
(435)888-4017

Sample I.D.

Pond "C" SE Inlet

Sampled By: Peter Hess

Date:  
5/13/2010

Time:  
13:43

Received

Date:  
5/17/2010

Time:  
14:07

Field Measurements

Cond. uS Temp. C pH D.O. ppm Turbidity NTU

Notes:

Sample Taken at Wildcat Loadout / Pond "C" / SE Inlet.  
Sample is effluent from Crandall Mine Iron Sludge  
Treatment Pond.

\*pH expired when received.

Lab I.D. #: 1022

Mine Code

Site Code

**Certificate of Analysis**

Analyte	Results	Units	MRL	Method	Date	Time	Analyst
<u>Wet Chem.</u>							
pH*	8.48	pH Units	N/A	SM 4500 -H+ B-00	5/19/2010	14:25	BLP
Solids, Total Dissolved	772	mg/L	20	SM 2540 C-97	5/20/2010	14:03	BLP
Solids, Total Suspended	11	mg/L	4	SM 2540 D-97	5/20/2010	14:03	BLP
<u>Metals by ICP</u>							
Aluminum, Dissolved	0.05	mg/L	0.02	EPA 200.7	6/2/2010	15:36	BLP
Aluminum, Total	0.25	mg/L	0.02	EPA 200.7	6/2/2010	9:02	BLP
Iron, Dissolved	<0.010	mg/L	0.010	EPA 200.7	6/2/2010	15:36	BLP
Iron, Total	0.078	mg/L	0.010	EPA 200.7	6/2/2010	9:02	BLP
Manganese, Dissolved	0.008	mg/L	0.001	EPA 200.7	6/2/2010	15:36	BLP
Manganese, Total	0.016	mg/L	0.001	EPA 200.7	6/2/2010	9:02	BLP

Brandon Pierce  
Technical Director

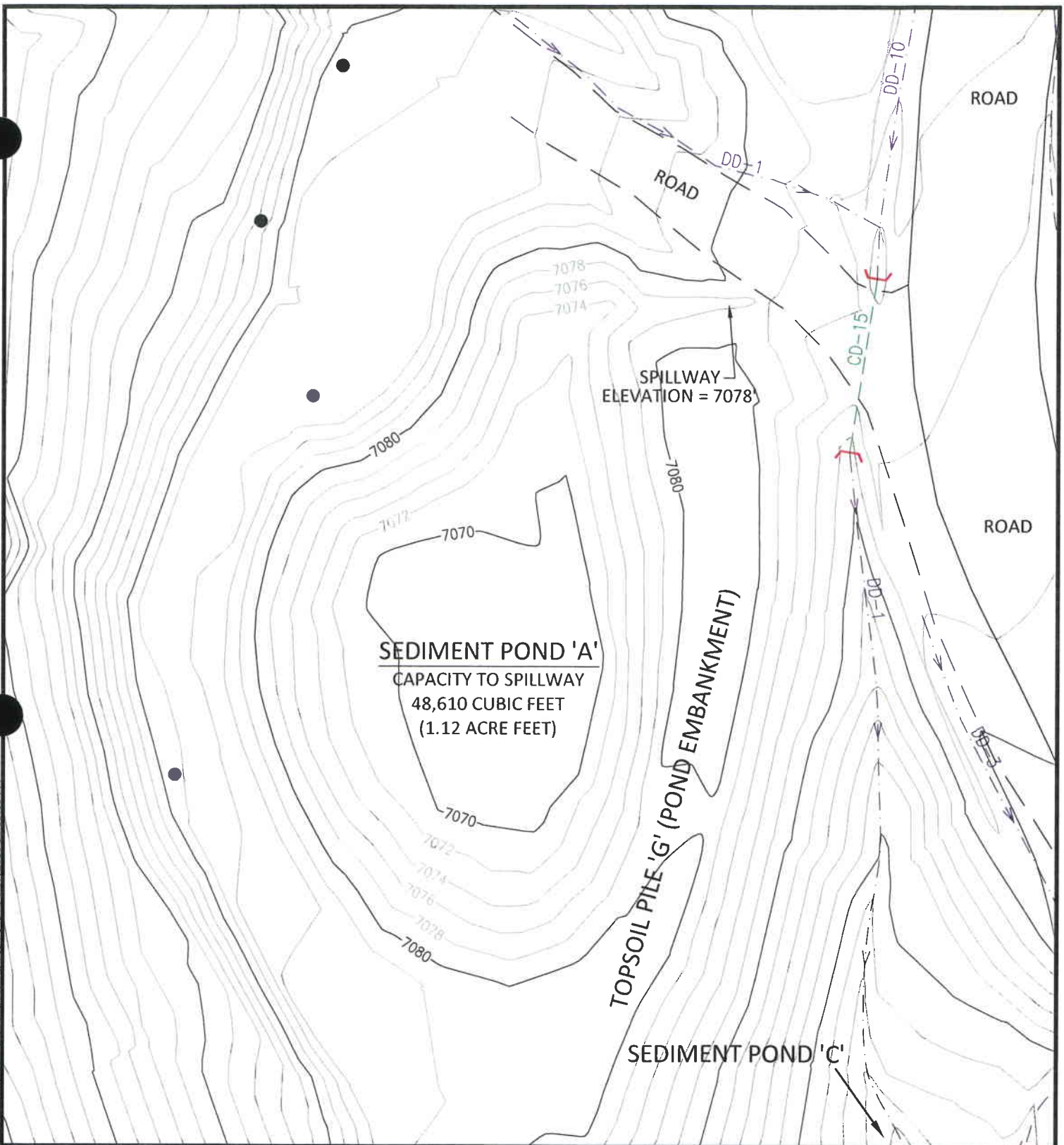
All reported results meet the requirements of NELAC, except for Balance and Hardness.  
Balance and Hardness are calculated from certified results.

APPENDIX XX-AA  
ATTACHMENT 3

AS-BUILT DRAWING  
CENTENNIAL “defunct” SEDIMENT POND A

a.k.a.  
MINE DEVELOPMENT WASTE STORAGE AREA

G:\Current Drawings\Towers\Tower Mine\Surface\Sed Pond A\Sediment Pond Adwn, Sed Pond A, 12/7/2010, 12:33:00 PM



## LEGEND

- Disturbed Surface Drainage
- Disturbed Drainage Culvert
- Power Pole
- Rock Guard Wall



## AS-BUILT DRAWING SEDIMENT POND 'A'



**ANDALEX**  
RESOURCES, INC.

Tower Division  
6750 AIRPORT ROAD  
PRICE, UTAH 84501

MSHA MINE ID #42-02028

DRAWN BY	PJ	SCALE	1" = 30'
APPROVED BY	DS	DATE	7 DEC. 2010
SHEET	ATTACHMENT 3		